Effects of Forest Practices on the Abundance of Cascade Torrent Salamanders

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The results of 2 M.S. thesis studies are reported. Craig Steele sampled 34 streams in forests representing a chronosequence of recent harvests through 90+ years old. Regression tree analyses indicated that salamander (*Rhyacotriton cascadae*) abundance was lowest in 0-22 year old stands (0.5/m), greatest in 23-59 year old stands (3-6/m) and intermediate in $\geq$ 60 year old stands (1/m). In addition, salamanders were more abundant in streams with water temperatures $\leq$ 9 C, but water temperature was not related to forest age. Kathleen Pollett sampled streams in recent clearcuts without buffers (10), streams in clearcuts with buffers (12), and stands not harvested (10) to determine if buffers maintained salamander abundance. In addition, air and stream temperature at those sites was sampled every ½ hour from early July-late October. Salamander abundance was 0.2/m in streams without buffers, and 0.5/m in buffered and no harvest streams. A confidence interval analysis, based on raw effect sizes, indicated that buffers maintained salamander abundance. The correlation between buffer width and salamander abundance was –0.40, but more data is needed to accurately describe this relationship. Air temperatures were greatest (P = 0.0001) (24 C) and lowest (8 C) in clearcuts, followed by buffers (20 and 10 C), then no harvest stands (17 and 10 C). However maximum and minimum water temperatures averaged 11 and 10 C, respectively, for all streams. Clearcut harvest appears to reduce salamander abundance, but populations recover by mid-rotation, and buffers appear to ameliorate the sort-term effect of clearcut harvest. Salamanders are more abundant in streams with temperatures between 7-9 C, and air temperature had a small effect on water temperature.

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